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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
HUGHES, SCOTT A	
ART UNIT	**PAPER NUMBER**
3663	

DATE MAILED: 05/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/664,566	ISELI, JAMES W.
	Examiner	Art Unit
	Scott A. Hughes	3663

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 April 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26,61-63 and 69-71* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26,61-63 and 69-71* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 July 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4/13/2006*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims 1-26, 61-63 and 69-71 have been considered but are moot in view of the new ground(s) of rejection.

Applicant argues that the Tanenhaus reference is not intended for use in seismic surveying operations or, more specifically, to record seismic data suitable for characterizing subsurface formations. These arguments are not persuasive because they are arguing the intended use of the apparatus, and not the structural limitations of the apparatus being claimed. Further, there is nothing in the claim language of claim 1 that limits the apparatus to being used in seismic surveying operations or characterizing subsurface formations. The limitations of claim 1 are only directed to an apparatus for seismic data acquisition, and since the device of Tanenhaus has seismic sensors it reads on a device for seismic data acquisition. Since Tanenhaus discloses the use of seismic sensors, the reference meets the limitation of a sensor unit for sensing seismic energy. With regard to claim 61, the preamble that states that the system is for seismic surveying is an intended use and is not read as a structural claim limitation of the system.

Applicant further argues that the GPS units connected to the data processing circuits in Tanenhaus are used to provide position information in military environments and that the position data are not utilized to process the data collected by the sensors. The claim language does not prevent a GPS used for military purposes. Further, the

claim language states, “the position data being correlated with the acquired seismic data.” This is not the same as utilizing the position data to process the acquired sensor data as applicant argues. Tanenhaus discloses that the GPS is connected to the data acquisition processing circuit for providing data such as the location or position of the device being monitored over time. Therefore, with the limitation of correlated given a broad interpretation, Tanenhaus meets the limitation of the location parameter being correlated with the acquired seismic data since it put onto the same processing circuit.

Further, the limitation of “the location parameter being correlated with the acquired seismic data” or “a location parameter to be correlated” are method limitations in the claim and do not add any further structural limitation to the apparatus claims. The location parameter and the acquired seismic data are also the material or article worked upon in the claims, and do not further limit the structure of the apparatus claims (see MPEP 2115).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-13, 15-26, 61, and 63 are rejected under 35 U.S.C. 102(e) as being anticipated by Tanenhaus.

With regard to claim 1, Tanenhaus discloses an apparatus for seismic data acquisition (Column 4, Lines 10-31). Tanenhaus discloses a sensor unit for sensing seismic energy, the sensor unit providing a signal indicative of seismic energy sensed by the sensor unit (Column 2; Column 4, Lines 10-45; Columns 5-6). Tanenhaus discloses an acquisition device co-located with the sensor unit and coupled thereto for receiving the signal (Figs. 1, 8-9) (abstract; Column 2; Column 5, Line 10 to Column 6). Tanenhaus discloses a location sensor associated with the acquisition device, providing a location parameter to only the acquisition device, the location parameter being correlated with the acquired seismic data (Column 8, Lines 43-60). Tanenhaus discloses a memory unit having a first memory disposed in the acquisition device for storing in digital form information indicative of the received signal (Column 6, Lines 1-8; Column 6, Lines 55-65; Column 9). Tanenhaus discloses a second memory for storing a location parameter associated with the sensor unit (Column 8, Lines 50-60). Tanenhaus discloses a communication device for providing direct bi-directional communication between the acquisition device and a remotely located central controller (abstract; Column 7; Column 8, Lines 1-10, 26-43; Column 9) (Fig. 1, Fig. 9).

With regard to claim 2, Tanenhaus discloses that the sensor unit, location sensor, and the acquisition device are housed in a common housing (Fig. 9) (Column 8).

With regard to claim 3, Tanenhaus discloses that the sensor unit and the acquisition device are coupled together with a cable (Columns 4-6) (Figs. 1,9). The MEMS accelerometer sensors and other sensors (including other seismic sensors as disclosed) are connected to the rest of the circuitry in the device with wires. This is read as being connected by a cable since they are electrically connected to the rest of the acquisition device by conductors that allow the signals to be passed from one part of the device to another.

With regard to claim 4, Tanenhaus discloses that the sensor unit includes a velocity sensor (Column 4, Lines 10-45).

With regard to claim 5, Tanenhaus discloses that the sensor includes an accelerometer (Column 4, Lines 10-45).

With regard to claim 6, Tanenhaus discloses that the sensor unit includes a multi-component sensor (Column 4, Lines 10-45).

With regard to claim 7, Tanenhaus discloses that the sensor unit has a multi-component accelerometer having a digital output signal (Column 4, Lines 10-45; Column 5).

With regard to claim 8, Tanenhaus discloses an analog to digital converter disposed in the sensor unit, the signal provided by the sensor unit including a digital signal (Column 2; Column 5).

With regard to claim 9, Tanenhaus discloses that the signal is an analog signal, the apparatus further comprising an analog-to-digital converter disposed in the acquisition device for converting the signal to digital data (Column 2, Column 5).

With regard to claim 10, Tanenhaus discloses that the first memory is a nonvolatile memory (Column 6, Lines 55-65).

With regard to claim 11, Tanenhaus discloses that the first memory comprises a removable memory (Column 6, Lines 55-65). Flash memory is known to be removable.

With regard to claim 12, Tanenhaus discloses that the first memory comprises a nonvolatile removable memory card (Column 5, Lines 55-65).

With regard to claim 13, Tanenhaus discloses that the memory unit includes an inductive coupling device for transferring the information stored in the memory unit to an external device (Column 7; Column 8, Lines 1-10, 25-60).

With regard to claim 15, Tanenhaus discloses that the sensor unit is coupled to the acquisition device using a sensor connector, the memory unit also being coupled to the sensor connector for enabling retrieval of the information stored in the memory unit using the sensor connector (Figs. 1, 6-9). All of the components are connected together by circuitry that is read as being a sensor connector. The sensors, processors, and memory are all connected together inside of the acquisition device.

With regard to claim 16, Tanenhaus discloses that communication with the central controller provides wireless command and control for the apparatus (Column 2; Column 7; Column 8, Lines 1-10, 25-60; Column 9).

With regard to claim 17, Tanenhaus discloses a processor associated with the acquisition unit and the communication device, the processor processing programmed instructions enabling a software defined radio transceiver (Column 2; Column 7; Column 8, Lines 1-10, 25-60; Column 9).

With regard to claim 18, Tanenhaus discloses that the communication device includes a direct conversion radio transceiver for wireless communication between the apparatus and the remotely located central controller (Column 2; Column 7; Column 8, Lines 1-10, 25-60; Column 9).

With regard to claim 19, Tanenhaus discloses a processor in the acquisition unit for providing one or more of local control, time keeping, or power management (Column 7; Column 6, Line 65 to Column 7, Line 12).

With regard to claim 20, Tanenhaus discloses a power source disposed in the acquisition deice for providing electrical power to one or more of the acquisition device, the sensor unit, and the communication device (Column 7).

With regard to claim 21, Tanenhaus discloses that the power source is removable (Column 7, Lines 29-63).

With regard to claim 22, Tanenhaus discloses that the power source is a rechargeable battery (Column 7, Lines 29-63).

With regard to claim 23, Tanenhaus discloses an inductive coupling in the acquisition device, the inductive coupling being operably coupled to the rechargeable battery to allow charging of the rechargeable battery by a second power source external to the acquisition device (Column 7, Lines 29-63).

With regard to claim 24, Tanenhaus discloses a connector disposed in the data acquisition device, the connector being operably coupled to the rechargeable battery to allow charging of the battery by the external power device (Column 7, Lines 29-63).

With regard to claim 25, Tanenhaus discloses that the rechargeable battery is a lithium based battery (Column 7, Lines 29-63).

With regard to claim 26, Tanenhaus discloses a GPS receiver associated with the sensor unit for determining the location parameter (Column 8, Lines 50-60).

With regard to claim 61, Tanenhaus discloses a system for seismic surveying. Tanenhaus discloses a central controller 50 (Fig. 1), a sensor unit 20 remotely located from the central controller, the sensor unit coupled to the earth for sensing seismic energy in the earth and for providing a signal indicative of the sensed seismic energy (Column 2; Column 4, Lines 10-45; Columns 5-6). Tanenhaus discloses a recorder device co-located with the sensor unit and coupled thereto for receiving the signal and for storing in digital form information indicative of the received signal in a first memory disposed in the recorder device (Figs. 1, 6-9) (Column 2; Column 4, Lines 10-65; Column 5; Column 6, Lines 42-65; Column 9). Tanenhaus discloses a location sensor associated with the acquisition device, providing a location parameter, the sensor unit, the recorder device, and the location sensor forming a single sensor station, the location parameter being correlated with the acquired seismic data (Column 8, Lines 43-60) (Fig. 1). Tanenhaus discloses a second memory for storing a location parameter associated with the sensor unit (Column 8, Lines 50-60), and a communication device co-located with the sensor unit and the recorded device for providing bi-directional communication with the central controller (Column 2; Column 7; Column 8, Lines 1-10, 25-60; Column 9).

With regard to claim 63, Tanenhaus discloses that the communication device includes a two-way wireless transceiver for wireless communication with the central controller (Columns 7-8).

Claims 69-71 are rejected under 35 U.S.C. 102(e) as being anticipated by Wood (5724241)

With regard to claim 69, Wood discloses a system for seismic data acquisition. Wood discloses a central controller 16 (Fig. 1) (Column 6, Lines 15-25). Wood discloses a plurality of sensors 20 disposed to form a seismic spread having a plurality of sensing locations (Figs. 1,2) (Column 5, Line 50 to Column 6, Line 50). Wood discloses a plurality of recorders 10, each of the plurality of recorders recording seismic information corresponding to a selected sensing location from the plurality of sensing locations (Column 6, Line 25 to Column 7, Line 25). Wood discloses the plurality of recorders 10 being in direct bi-directional communication with the central controller (Column 5, Line 50 to Column 6, Line 25; Column 8, Line 20 to Column 9, Line30) (Table – Columns 8-9). Wood discloses that the central control unit has a radio transceiver that communicates directly with the radio transceivers 14 on the ADAM units. Wood discloses a location sensor associated with each of the plurality of recorders providing a location parameter, the location parameter being correlated with the acquired seismic data (abstract; Column 6; Column 7, Lines 24-60).

With regard to claim 70, Wood discloses an apparatus for seismic data acquisition. Wood discloses a plurality of sensors 20 disposed to form a seismic spread

having a plurality of sensing locations (Figs. 1,2) (Column 5, Line 50 to Column 6, Line 50). Wood discloses a plurality of recorders 10, each of the plurality of recorders recording in digital form seismic information corresponding to a selected sensing location from the plurality of sensing locations (Column 6, Kline 25 to Column 7, Line33). Wood discloses a location sensor associated with each of the plurality of recorders providing a location parameter, the location parameter being correlated with the acquired seismic data (abstract; Column 6; Column 7, Lines 24-60).

With regard to claim 71, Wood discloses a sensor unit 20 (Figs. 1-2) for sensing seismic energy, the sensor unit providing a signal indicative of the sensed seismic energy (Column 4, Line 50 to Column 5, Line 17; Column 5, Line 50 to Column 6, Line 49). Wood discloses a location sensor associated with each of the plurality of recorders providing a location parameter, the location parameter being correlated with the acquired seismic data (abstract; Column 6; Column 7, Lines 24-60). Wood discloses an acquisition device 10 co-located with the sensor unit and coupled thereto for receiving the signal and the location parameter (Figs. 1-2) (abstract; Column 4, Line 50 to Column 5, Line 17; Column 5, Line 50 to Column 6, Line 49; Column 7). Wood discloses a memory unit disposed in the acquisition device for storing information indicative of the received signal (Column 7, Lines 1-60). Wood discloses a direct-conversion radio transceiver for providing communication between the acquisition device and a remotely located central controller 16 (Fig. 1) (Column 5, Line 50 to Column 6, Line 25; Column 8, Line 20 to Column 9, Line30) (Table – Columns 8-9).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 3, 8-9, 13-19, 26, 61-63, and 69-71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rialan (5276655) in view of Longaker (5978313).

With regard to claim 1, Rialan discloses an apparatus for seismic data acquisition (abstract). Rialan discloses a sensor unit R for sensing seismic energy, the sensor unit providing a signal indicative of seismic energy sensed by the sensor unit (Column 4, Liens 20-30). Rialan discloses an acquisition B device co-located with the sensor unit and coupled thereto for receiving the signal (Column 4, Line 25). Rialan discloses a memory unit having a first memory disposed in the acquisition device for storing in digital form information indicative of the received signal (Column 5, Lines 30-55). Rialan discloses a second memory for storing a location parameter associated with the sensor unit (Column 4, Lines 47-60; Column 5, Lines 40-55). Rialan discloses a communication device for providing direct bi-directional communication between the acquisition device and a remotely located central controller 1 (Column 4, Lines 10-45; Column 5). Rialan discloses that an operator transmits position data to each device before the survey begins. Rialan does not disclose a location sensor associated with the acquisition device providing a location parameter to only the acquisition device, the

location parameter being correlated with the seismic data. Longaker teaches a seismic survey system that uses sensors connected to acquisition units that are in turn connected to a central controller (Figs. 3-4). Longaker teaches using a GPS as a location sensor associated with the acquisition devices to provide location information (abstract; Column 3, Line 22 to Column 4, Line 17). It would have been obvious to modify Rialan to include using GPS sensors with each acquisition device in order to be able to know the exact position of each device from the obtained position signal and also the be able to use the time signal transmitted with the GPS signal to synchronize the system.

With regard to claim 3, Rialan discloses that the sensor unit and the acquisition device are coupled together with a cable (Column 4, Lines 20-30) (Fig. 1).

With regard to claim 8, Rialan discloses an analog to digital converter disposed in the sensor unit, the signal provided by the sensor unit including a digital signal (Column 4, lines 20-45).

With regard to claim 9, Rialan discloses that the signal is an analog signal, the apparatus further comprising an analog-to-digital converter disposed in the acquisition device for converting the signal to digital data (Column 4, Lines 20-45).

With regard to claim 13, Rialan discloses that the memory unit includes an inductive coupling device for transferring the information stored in the memory unit to an external device (Column 5, Column 4, Lines 20-45).

With regard to claim 14, Rialan discloses that the memory unit includes an optical coupling device for transferring the information stored in the memory unit to an external device (Column 5, Lines 12-53).

With regard to claim 15, Rialan discloses that the sensor unit is coupled to the acquisition device using a sensor connector, the memory unit also being coupled to the sensor connector for enabling retrieval of the information stored in the memory unit using the sensor connector (Column 5).

With regard to claim 16, Rialan discloses that communication with the central controller provides wireless command and control for the apparatus (Columns 4-5) (Fig. 1).

With regard to claim 17, Rialan discloses a processor associated with the acquisition unit and the communication device, the processor processing programmed instructions enabling a software defined radio transceiver (Column 4, Lines 35-47; Column 5).

With regard to claim 18, Rialan discloses that the communication device includes a direct conversion radio transceiver for wireless communication between the apparatus and the remotely located central controller (Column 4, Lines 35-47).

With regard to claim 19, Rialan discloses a processor in the acquisition unit for providing one or more of local control, time keeping, or power management (Column 2; Columns 4-5).

With regard to claim 26, Rialan discloses a GPS receiver associated with the sensor unit for determining the location parameter (Column 4, Line 61 to Column 5, Line 5).

With regard to claim 61, Rialan discloses a system for seismic surveying. Rialan discloses a central controller 1, a sensor unit R remotely located from the central controller, the sensor unit coupled to the earth for sensing seismic energy in the earth and for providing a signal indicative of the sensed seismic energy (Fig. 1) (abstract; Column 4, Lines 10-45). Rialan discloses a recorder device B co-located with the sensor unit and coupled thereto for receiving the signal and for storing in digital form information indicative of the received signal in a first memory disposed in the recorder device (Column 4; Column 5, Lines 30-53). Rialan discloses a second memory for storing a location parameter associated with the sensor unit (Column 4, Lines 47-60; Column 5, Lines 40-55), and a communication device co-located with the sensor unit and the recorded device for providing bi-directional communication with the central controller (Column 4, Lines 20-47; Column 5). Rialan discloses that an operator transmits position data to each device before the survey begins. Rialan does not disclose a location sensor associated with the acquisition device providing a location parameter to only the acquisition device, the location parameter being correlated with the seismic data. Longaker teaches a seismic survey system that uses sensors connected to acquisition units that are in turn connected to a central controller (Figs. 3-4). Longaker teaches using a GPS as a location sensor associated with the acquisition devices to provide location information (abstract; Column 3, Line 22 to Column 4, Line

17). It would have been obvious to modify Rialan to include using GPS sensors with each acquisition device in order to be able to know the exact position of each device from the obtained position signal and also the be able to use the time signal transmitted with the GPS signal to synchronize the system.

With regard to claim 62, Rialan discloses an energy source S for providing the seismic energy to the earth (Fig. 1).

With regard to claim 63, Rialan discloses that the communication device includes a two-way wireless transceiver for wireless communication with the central controller (Columns 4-5).

With regard to claim 69, Rialan discloses a system for seismic data acquisition. Rialan discloses a central controller 1, and a plurality of sensors R disposed to form a seismic spread having a plurality of sensing locations (Fig. 1) (abstract; Column 4, Lines 10-20). Rialan discloses a plurality of recorders B, each of the plurality of recorders recording seismic information corresponding to a selected sensing location from the plurality of sensing locations, each of the plurality of recorders being in direct bi-directional communication with the central controller (Columns 2-3; Column 4, Lines 25-47; Column 5). Rialan discloses that an operator transmits position data to each device before the survey begins. Rialan does not disclose a location sensor associated with each acquisition device providing a location parameter to be correlated with the seismic data. Longaker teaches a seismic survey system that uses sensors connected to acquisition units that are in turn connected to a central controller (Figs. 3-4). Longaker teaches using a GPS as a location sensor associated with the acquisition devices to

provide location information (abstract; Column 3, Line 22 to Column 4, Line 17). It would have been obvious to modify Rialan to include using GPS sensors with each acquisition device in order to be able to know the exact position of each device from the obtained position signal and also the be able to use the time signal transmitted with the GPS signal to synchronize the system.

With regard to claim 70, Rialan discloses an apparatus for seismic data acquisition (Fig. 1). Rialan discloses a plurality of sensors R disposed to form a seismic spread having a plurality of sensing locations (Column 4, Lines 10-20) (Fig. 1). Rialan discloses a plurality of recorders B, each of the plurality of recorders recording in digital form seismic information corresponding to a selected sensing location from the plurality of sensing locations (Column 4; Column 5, Lines 30-53). Rialan discloses that an operator transmits position data to each device before the survey begins. Rialan does not disclose a location sensor associated with each acquisition device providing a location parameter to be with the seismic data. Longaker teaches a seismic survey system that uses sensors connected to acquisition units that are in turn connected to a central controller (Figs. 3-4). Longaker teaches using a GPS as a location sensor associated with the acquisition devices to provide location information (abstract; Column 3, Line 22 to Column 4, Line 17). It would have been obvious to modify Rialan to include using GPS sensors with each acquisition device in order to be able to know the exact position of each device from the obtained position signal and also the be able to use the time signal transmitted with the GPS signal to synchronize the system.

With regard to claim 71, Rialan discloses an apparatus for seismic data acquisition (Fig. 1). Rialan discloses a sensor unit R for sensing seismic energy, the sensor unit providing a signal indicative of the sensed seismic energy (Column 4). Rialan discloses an acquisition device B co-located with the sensor unit and coupled thereto for receiving the signal (Column 4; Column 5, Lines 30-53). Rialan discloses a memory unit disposed in the acquisition device for storing information indicative of the received signal (Column 5, Lines 30-53). Rialan discloses a direct-conversion radio transceiver for providing communication between the acquisition device and a remotely located central controller (Column 4, Column 5, Lines 13-55) (Fig. 1). Rialan discloses that an operator transmits position data to each device before the survey begins. Rialan does not disclose a location sensor associated with each acquisition device providing a location parameter to be correlated with the seismic data. Longaker teaches a seismic survey system that uses sensors connected to acquisition units that are in turn connected to a central controller (Figs. 3-4). Longaker teaches using a GPS as a location sensor associated with the acquisition devices to provide location information (abstract; Column 3, Line 22 to Column 4, Line 17). It would have been obvious to modify Rialan to include using GPS sensors with each acquisition device in order to be able to know the exact position of each device from the obtained position signal and also the be able to use the time signal transmitted with the GPS signal to synchronize the system.

Claims 14 and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanenhaus as applied to claims 1-13 and 61 above, and further in view of Rialan (5276655).

With regard to claim 14, Tanenhaus does not disclose that the memory unit includes an optical coupling device for transferring the information stored in the memory unit to an external device. Rialan discloses a seismic survey system wherein the data is transferred from a memory unit to an external device by means of optical coupling device (Column 5). It would have been obvious to modify Tanenhaus to include an optical coupling device as taught by Rialan in order to transfer the data directly from one device to another without the operator of the devices having to leave the measuring space or without the receiver needing to be taken to another place to retrieve the data from it.

With regard to claim 62, Tanenhaus does not disclose an energy source for providing the seismic energy to the earth. Rialan discloses a seismic energy source S (Fig. 1) on the surface of the earth to provide seismic energy. It would have been obvious to modify Tanenhaus to include a seismic source in order to generate the seismic waves that can be recorded by the seismic sensors inside of the sensing device to obtain a seismic survey of an area.

Claims 4-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rialan in view of Longaker as applied to claims 1-3 above, and further in view of Siems.

With regard to claim 4, Rialan does not disclose that the sensor unit includes a velocity sensor. Rialan discloses that the sensors are seismic sensors but does not disclose the specific type of sensor. Siems discloses a similar seismic system as that of Rialan with a central controller and a spread of seismic sensors that are connected to the central controller by acquisition devices (Fig. 1). Siems discloses that 3-component geophones for taking the seismic data. It would have been obvious to include geophones as the sensors in Rialan as taught by Siems since Siems discloses that these are known to be compatible sensors for taking seismic surveys in these types of surveys in order to take seismic data along three axes (Siems, Column 4).

With regard to claim 5, Siems discloses that the sensor includes an accelerometer (geophone) (Column 4).

With regard to claim 6, Siems discloses that the sensor unit includes a multi-component sensor (Column 4).

With regard to claim 7, Siems discloses that the sensor unit has a multi-component accelerometer having a digital output signal (abstract; Column 4).

Claims 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rialan in view of Longaker as applied to claims 1-3 and 8-9 above, and further in view of Tanenhaus.

With regard to claims 10-12, Rialan does not disclose that the first memory is a nonvolatile memory or that the memory is removable. Rialan discloses a memory, but does not disclose the specifics of the memory. Tanenhaus discloses the use of a

nonvolatile, removable memory card in a device that can be used for seismic acquisition (Column 6, Lines 55-65). Tanenhaus discloses the use of FLASH memory, which is known to be used in removable memory cards. It would have been obvious to modify Rialan to include the use of nonvolatile, removable memory cards as taught by Tanenhaus in order to have a small memory device capable of storing large amounts of data as FLASH memory is able to do.

Conclusion

The cited prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott A. Hughes whose telephone number is 571-272-6983. The examiner can normally be reached on M-F 9:00am to 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on (571) 272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SAH

JACK KEITH
SUPERVISORY PATENT EXAMINER